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ABSTRACT

Twenty families in the San Francisco Bay area (California) with new Atari home video game sets were studied from February through June 1981 to obtain data on how the game-playing affected family interaction. Records of play were kept for one week each month and each family member was interviewed at the beginning and the end of the study. It was found that: (1) the majority of families spent less than an hour per day in average game-playing time for the total family; (2) time spent playing video games decreased 13 minutes from the first recordkeeping period to the last for the total sample; (3) family and sibling interaction increased in nearly all families as adults and children played with each other; (4) families with all girls had the highest percentage of recorded time spent playing with other family members; (5) mothers were reluctant to play the video games; (6) all but 1 of 17 fathers in the study played the games with the family at least occasionally; (7) two-thirds of the families reported watching less television; (8) families reported spending less money on coin-operated machines; (9) no families reported a detrimental effect on school work as a result of playing the home video games and some reported school work improvement; (10) none of the families saw a relationship between playing video games and developing aggressive, violent personalities; (11) girls tended overall to play less than boys; and (12) most of the families saw their video games as a bridge to personal computers. Quotations from family interviews are included in the report. (Author/ESR)

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HOME VIDEO GAMES:

CHILDREN AND PARENTS LEARN TO PLAY AND PLAY TO LEARN

PRESENTED AT THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

ANNUAL MEETING, NEW ORLEANS, APRIL 1984

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ABSTRACT

HOME VIDEO GAMES
CHILDREN AND PARENTS LEARN TO PLAY AND PLAY TO LEARN

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Twenty families with new home video-game sets were studied from February through June, 1981 to obtain data on how the game playing affected family interaction. Results show that the majority of families spent less than an hour per day in average game-playing time for the total family. Time spent playing video-games decreased 13 minutes from the first record keeping period to the last for the total sample. In families with all girls the time decreased by 25 minutes. Statistically significant differences in the amount of time played at the end of the study as compared with the beginning were found in both families whose playing time decreased and families whose playing time increased. Thirteen out of twenty families were playing less, however.

Family interaction increased in nearly all families as adults and children played with each other and as more sibling interaction was reported. Cooperation and encouragement were the major characteristics of the interaction reported. Families with all girls had the highest percentage of recorded time spent playing with other family members. The highest rates of playing alone were reported in families with one child and families with all boys.

Mothers were reluctant to play the video-games. Only 50% of the twenty mothers even attempted to play. Among those who did, two became enthusiastic and skillful players.

All but one of the seventeen fathers in the study played the games with the family at least occasionally. Four of the fathers played frequently and often by themselves at night or on weekends.

Two-thirds of the families reported watching less television. The others reported the video-games had not changed their television viewing significantly.

Families reported spending less money on coin-operated machines, although families with teenage boys indicated the interest in the arcades and the coin-operated games was still a problem.

All families had a "homework first" rule with respect to video-games as well as television. This rule was not always observed, but was understood. Many parents and children reported that the video-games had helped them in some aspect of learning: faster reflexes, better eye-hand coordination, increased reading speed, improved perceptual judgement in outdoor sports. No families reported a detrimental effect on schoolwork as a result of playing the home video-games. Some reported an improvement in schoolwork.

None of the families saw a relationship between playing video-games and developing aggressive, violent, war-mongering personalities.

Girls tended to play less than boys, overall. They thought girls could play as well as boys if they practiced, but believed most of the games were designed with boys in mind. The boys, also, believed girls could become skillful players if they spent time practicing.

Most of the families saw their video-games as a bridge to personal computers which their children would be using in the future.

Criticisms expressed by families were about the expense of each new cartridge, the noise of the games, and the fact that the home games were disappointing imitations of the more complex and challenging arcade games.

INTRODUCTION AND REVIEW OF RESEARCH

Video game fever rose spectacularly in the United States in December, 1981 as the pre-holiday advertising blitz accelerated. The sale of home video game equipment was at an unprecedented high; a peak which declined in the following months causing consternation in an industry in which emerging companies competed for this lucrative market. The video game craze was a new phenomenon in our culture. It was an ideal time to investigate the impact of the games on families, to study change in family interaction, and to ascertain the effects of this technology on family life.

A substantial body of research literature exists on play and games, both theoretical and descriptive. Current research has focused on the use of computers in education, and on the effects of television viewing on children; but there has been no systematic investigation of the effects of home video game playing on children or families.

Even without research evidence assumptions about negative effects of video games on children have permeated media reports. Much of the adverse publicity surrounding video games stems from opinion and speculation about their presumed bad effects on morals and school attendance. Statements in the press by social scientists, psychologists, and other "experts" on both sides of the question have been widely quoted without distinction between fact and feeling. Psychologists have used words like "mesmerizing", "narcotizing", and 'addictive" to describe what happens when children play video games. Even the Surgeon General of the United States, with no data to support his statement, warned that these games could be dangerous for young people. He predicted that they may make children ready to accept or copy violence. In defense of this unsubstantiated opinion, he remarked that he expected the evidence to be forthcoming.[1]

Parents and concerned citizens in many communities battled to prevent arcades from multiplying, and to control

the environments of video game centers. Alarmed about the time and money being spent by youth on coin-operated video games, citizen groups across the nation initiated passage of local ordinances to restrict arcade business. Litigation over these ordinances reached the Supreme Court which, in February, 1982, sidestepped the ruling on whether local governments may limit the ability of children or teenagers to play in video game centers. The decision was referred back to the lower courts.[2]

Research on the use of video games has centered on clinical applications and rehabilitation of handicapped persons. The epilepsy center at Johns Hopkins University Medical School, for example, is using Atari sets to determine the effects of anticonvulsant drugs on learning and ability. The Veterans Administration Hospital Brain Injury Clinic in Palo Alto, California is using video-therapy to provide patients practice on perceptual-motor skills. Dr. Robert S. Eliot of the University of Nebraska Medical Center reported a study which showed dangerous increases in heart rate and blood pressure for adults during video game playing under clinical conditions.[3]

In a careful study of video games, Thomas W. Malone collected data on children's game preferences when controlled variations were introduced in certain games. The study was experimental, conducted in a laboratory setting, and did not attempt to obtain information about self-initiated game play by children in naturalistic settings.[4]

At this time no studies have been reported which provide information on the typical American family which owns a home video game set. From accounts in the press, which appear to focus on aberrant behavior, one would have to conclude that video game playing is addictive, that children rob and even murder as a result of their addiction, and that the playing of video games in arcades can be compared to playing home video games with equally deleterious effects. One would

also be led to believe that video game playing may isolate children, may cause them to withdraw into a world of fantasy, and at the very least may be detrimental to school achievement.

Although the study reported here does not support those beliefs, the concerns are legitimate ones and need to be subjected to thorough investigation. However, the results of this study, although tentative, offer more hope than despair in understanding the perspective and behavior of families who play video games at home.

PROCEDURES

Twenty families who purchased home video game sets at Christmastime, 1981, were selected for study. They were chosen from among fifty families identified as having new sets. Sources for locating families included advertising in newspapers, contacts in schools, and referrals by persons who knew of plans for the study. In order to reduce the confounding variables, families with sets other than Atari were not included. Atari was the most popular equipment on the market at the time. Preference was given to families with two or more school-age children; however, three of the families had an only-child in preadolescence.

The familes differed in socio-economic status, racial and ethnic backgrounds, and were from distinctly different neighborhoods in the San Francisco Bay Area. Six of the parents were single mothers, although three of these had boyfriends residing in the home. Five families had daughters only; two of these girls were only-children with no siblings. Four families had boys only; one of these boys was an only child. Fourteen families were two-parent families; two of these had stepfathers. There was a total of forty-four children in the sample, 20 girls and 24 boys. Twelve children were under ten, equally distributed by sex. Eighteen were between the ages of 10 and 13; eight of these were girls,

and ten were boys. Fourteen subjects were over fourteen years of age; six were girls and eight were boys.

The families kept records for one week each month over four months from February through May, recording the daily play by time of day, minutes played, persons playing, games played, and individual scores. Data collection began in early February in order to allow time for normal routines to be established after the first flush of enthusiasm for a new activity had waned.

Each family member was interviewed both at the beginning and at the end of the study. Interviews were conducted by a single researcher, using a tape recorder and a uniform set of questions. Family members were interviewed individually to provide comparison of perceptions of family interaction and attitudes. In exchange for their cooperation, families received three game cartridges: one during the study, and two after all data were collected. The study was funded through a modest research grant from the Institute for Education Action Research of Atari, Incorporated. The research was designed and conducted with complete independence from the Institute.

The research was not designed to determine cognitive gains of children, perceptual skill development, or significant sex differences in interest and skill. These are obviously important issues, but the focus of the study was on family interaction related to the intrusion of the entertainment form. The small size of the sample, variations in numbers and ages of children across families, and reliance on self-reporting in record keeping, limit the generalizability of the findings. Although quantitative data were collected, the intent of the study was to obtain qualitative descriptive data. This was not an experimental study and did not include experimental and control group comparisons or pre and post treatment data.

Questions of interest focused on whether or not the family played the games together, or were children playing

in isolation from others in the family. Did sibling age or sex make a difference in participation? Did parents play with their children, with each other, alone, or perhaps not at all? What concerns did parents have about the effects of the games on children? Did families observe a change in the amount of television watched by the children or the family as a whole? Did the video games contribute to the development of any new skills or interests in family members?

RESULTS

Amount of Time Spent Playing Home Video Games

The time spent on playing video games in the homes was less, on the average, by the end of the research period than at the beginning. The mean daily playing time for the sample dropped from 53 minutes at the beginning of the study to 40 minutes total family use daily. While the playing time showed a decrease in most of the families from the first to the final week, seven families (36%) were playing more at the end than at the beginning. The mean increase for these families was 24 minutes daily and represents a statistically significant increase ($t=2.964$, $p<.05$). However, thirteen families (64%) had a mean decrease of 33 minutes of daily playing time which was significant at the .01 level ($t=7.487$, $p<.01$).

The means of individual family playing time ranged from a low of 28 minutes daily to one hour and 43 minutes for families who played least and those who played most, respectively.

The average daily time was calculated from family records kept during assigned weeks each month. In many families there were days when the games were not played. Those days were not included in calculating average daily playing time. Time spent on video play at home averaged 42 minutes per day based on all recorded weeks of play excluding days of no play. If one were to include the no-play days in calculating weekly and daily playing time, the daily use of the games would be considerably less than 42 minutes per day.

The total sample means provide a rough index for determining average daily time spent by families playing home video games. It is more revealing to look at the families on the low and high ends of the range. Five families spent an average of an hour or more in daily play throughout the study, with one family having a daily average of one hour and 43 minutes. Fifteen (75%) of the families played much less than an hour per day.

Single parent families, as a group, had the highest daily average of 70.6 minutes. (Table 1.) Next high were families with all boys, 55 minutes; and families with siblings, 54.05 minutes. Families with daughters only had the lowest overall daily average of 48.5 minutes.

Families with daughters only showed the sharpest decrease in average daily playing time from the beginning of the study to the end, dropping from 60.4 minutes to 39.8 minutes daily.

Families with only one child showed an increase from 28.6 minutes to 54.6 minutes average daily playing time from the beginning to the end of the study. This is the only group as a subset which showed a clear and consistent increase in daily use over the data collection period.

It appears, in most families, regardless of the number of family members, home video game playing time does not differ significantly in average amount and will vary weekly and daily in individual families.

Most frequent playing times were just after school in the afternoon, and during weekends. Evening use and early morning use were recorded less frequently in the total sample, although a few families played regularly after dinner.

Play Among Family Members

Only children (N=3) tended to play alone more than with family or friends, although this picture is blurred since one child (a girl) did not report playing alone at any time. She always played with another person. The other

TABLE 1

Minutes of Average Daily Play

	Overall Average	1st Week Average	Final Week Average	Difference First and Final Week
Only-Child in Family (N=3)	48.5	28.6	54.6	+25.3
Families with Girls Only (N=5)	46.6	60.4	39.8	-25
Families with Boys Only (N=4)	55	46.4	32.6	-13.6
Single Parent Families (N=6)	70.6	67.6	52.3	-15.3
Two-parent Families (N=14)	51.3	48.7	37	-13.7
All Families with Siblings (N=17)	54.04	59.36	36.36	-17
All Families (Total Sample) N=20	42	53	40.29	-12.71

Significant difference between 1st record week time and final time for families whose time decreased: ($t=7.487$, $p < .01$)

Significant difference between 1st record week time and final time for families whose time increased: ($t=2.964$, $p < .05$)

two only-children played alone 63% of all their recorded time. The only-children recorded the smallest amounts of time playing with family or friends (9.3%). (Table #2.) The sample for only children is too small to provide other than an interesting clue to differences.

In families with all boys, boys played the games alone an average of 48% of the playing time. In families with all girls, the girls played alone less than any other sub-set of children (8.4%), and had the highest rates of time spent playing with family (50.86%) and with friends (35%).

It appears, from the information obtained, that children played video games alone most often if they were boys or if they were only-children in the family.

Adults were more likely to play by themselves alone in families where there was only one child (32%), or when the mother was a single parent (8.33%).

The greatest amount of group play among family members was in families with girls (50.86%); with the next high in all families with two or more children (35%).

Playing home video games with friends was highest, proportionately, in families with all girls (35%). But it must be noted that this group played less, overall, than any other subset. Sharing video games with friends accounted for 28% of the time for families with siblings, and 27% of the time in families with all boys. Only-children recorded play with friends 16.6% of the time.

Mothers' Video Game Play

Ten out of 20 mothers (50%) in the study made an effort to learn to play, or played at some time with their children. The others (50%) refused to try, saying they did not have time or were not interested at all. Of those who did try, three became increasingly interested and skillful during the data collection period. Two spentsubstantial amounts of private time in the early mornings or late at night playing and practicing. One practiced on her day off each week. They had

TABLE 2

Percent of Recorded Time Spent Playing Video Games Alone or with Others

	% A Child Alone	% With Family	% With Friends	% Parents or Adults Alone
Only-child Families	63	9.3	16.6	32
2 Parent Families	35.38	31.41	22.92	3.8
Single Mother Families	30	31.3	30.3	8.33
Girls Only	8.4	50.86	35	5.6
Boys Only	48	20	27	5
All W/ Siblings	32	35	28	5

one or two games which they preferred to play regularly in order to improve their skill. Four of the remaining eight mothers played occasionally in order to participate with their families, to play with children, husbands, or boyfriends. They were reluctant players, not strongly confident, but were taking pride in their own improvement. Six out of twenty mothers (30%) were learning to compete in a new medium which they viewed as essentially hostile and male-oriented. The remaining four mothers stopped playing altogether after a few intermittent attempts.

Some of the mothers made the following comments:

"I get nervous. I've gotten better, but my fingers get numb. I'm not very good at it. It's faster than me. I play by myself and leave the scores so the boys will know what I have made."

"My mind is thinking one thing and my hands doing something else. I was really frustrated. They did teach me, but it's not fun."

"They know I never will play because they make it too tough for me. I have played when nobody else is around, but I don't anymore. I'm just not that interested."

"No, I've never played it. Never touched it. I don't even know how it works. I just never seem to have time."

"I do not play. I haven't touched it. I haven't tried. I sit here and watch them play and it bores me; I can't see the point in it. I would rather read a book. If it makes them happy, that's fine. I don't have to get in it at all."

"I didn't think I would enjoy it, I had never played it before, but I like it. No one really taught me. I just watched. Initially I played with Michelle and Mitch, but now I play by myself. The interest depends on my particular mood; there are times when I want to relax. You cannot think of problems or other things, you just think of the game, and it's relaxing."

"I have been a little threatened by electronic games. I was suspicious at first, but then I realized there must be something happening. The kids love it. I played it quite a bit when it first came into the house. It was the social interaction that drew me in."

"I play when I'm allowed to touch it. When I get in line. I can't make the joystick work. I have beaten people by accident when they have kind of missed. I'm sure I could become skillful. I just haven't played enough."

"I started playing on my day off, and then began trying to improve my scores. It was just for myself to reach a certain point. Now,my husband and I play together and often play winners with the girls so the whole family can play."

Children commented about their mother's play:

"Mom didn't used to play much, but now she's become an Atari addict. She is always in front of the Atari. We used to have time to talk and have a family time; now she says, 'Go away, can't you see I'm playing?' It's always Pacman, after school, before dinner, after dinner, and late at night!"

"Mom doesn't play. I tried to teach her but she doesn't listen right."

"Mom is cute at it. Well, she's not real good, but she's cute. She's a real good sport...she tries."

"Mom never plays. She's too busy. When I ask her to play, she says she'll be there in a minute, but the next thing you know she'll be doing the laundry. She just forgets the whole thing. Once my parents played against each other. They were all excited. It was a happy moment when I saw my mom and dad getting all excited and jumping around. But that never happened again."

Father's Video Game Play

In the seventeen families with men in the household, only one man did not play at all. Four played frequently and thoroughly enjoyed the games. They often played before or after dinner. Most often they played when other members of the family were nearby, but on some occasions they played in isolation from the family late at night or early on a weekend morning when others were in bed. In five families, the parents played the games together when the children were not present, as well as playing at times as a whole family.

In many instances it was the father who initiated the purchase of the set. Mother's were acquiescent, but not

generally enthusiastic. In some cases the father's initial enthusiasm waned after he found he could not compete effectively with the children.

Some fathers commented:

"I tried skiing, but I quit because I hit too many trees. No, I don't want to play them because they beat me. I bought it for them"

"Sometimes he wants me to play with him and I do it, but he beats me everytime. I don't know how to play that game, so I put my concentration on something else. I cannot sit in one place, practicing."

"If they want to challenge me, I'm the first one in and out. I play at it, but I'm not hooked on it. I just do it to please the kids, to show them that adults are not perfect."

Among the more active players, fathers said:

"In male competitive sports this is the only thing that's come along that can bridge our gap, the gap between fathers and daughters. We have more camaraderie, more complimenting, more bringing out of comments in favor of our loved ones. Things that wouldn't normally come out in competitive sports like, 'Gee, dad, I didn't know you were that good, or that quick.' .. those kinds of things."

"I wanted one, but I bought it for Michelle. When we just had the tv we would sit around andwatch, but with the video games there's more friendly togetherness for some strange reason. I play winners. I find her cheering me on, saying, 'Come on, dad, come on!' Then she says, 'Hey, I'm playing against you!' I love playing games, but I play to win. Here I find us rooting for each other."

Among the wive's comments were:

"My husband loves it. There was a running challenge going between the father and sons for awhile. I began to think it would take over their whole lives, but it has begun to taper off. It was a nice common ground for the father and the kids. They play it together."

"He has always shared games with them and any sport. Since the video game came, he plays with them more than he ever did before. He can play it all the time in the

evening. When they're not sleeping, they're playing. He joins in just like a little boy."

A daughter commented:

"My dad is more sharing now with the family instead of falling asleep on the sofa after dinner. We will get together playing the Atari. We're all watching and cheering each other on."

Cooperation and Competition in Family Interaction

Many parents commented on the role of video games in providing opportunity for family interaction in ways which had not previously occured. Some comments were:

"They have learned to communicate. In the beginning they didn't like to lose, but since then they have learned it's o.k. to lose once in awhile. They congratulate each other when they have a good game."

"It is good for the kids. When theyplay they know how to get along together."

"At first it seemed like they had toplay together, then they learned to play by themselves with the machine. That took a couple of weeks. They have different skills. In this game, they seem to be very close and yet can be competitive. When they play outside, it is just the opposite."

"I definitely think there has been change of family interaction in the house with the video games. The girls are competing on a level with the boys, they play more together. Age doesn't seem to make a difference; age and sex are eliminated. The boys don't resent that at all. I think they helped each other, especially at the beginning."

Mothers said:

"He and his sister are interacting more as well as with both his friends and hers. It is bringing both groups of friends together more. Sometimes I'll have as many as seven kids downstairs and only two can play at a time, but the others are sitting there rooting for each other, 'Come on, do this; come on,do that.' It helps them play together, and they are able to organize the whole activity."

"I think he's interacting with girls a lot better and with his sister, especially. He relates to her a lot more. They seem to have gotten closer."

"I see a lot more cooperative play between them, more sharing. This is something non-physical where they can compete and the younger one is able to play and win occasionally."

A single mother of two sons quite separate in age:

"Their interaction has increased. They do more together. Age makes no difference in the competition. They will end up fighting because the older one gets jealous if the younger one wins. Actually, they play this better than anything they've ever done. This is the first time they've ever really played together. They talk about what they did, what their scores are, what's happening in the game. It's a shared activity and a competitive sort of one; much better than passively watching tv without any interaction or thought."

Children reported:

"I see more of my sister. We spend more time with each other."

"My dad spends a lot more time with me. It has really brought us closer. He just spends more time in the family room watching us play it."

On a contrasting note, one mother said, "I don't encourage them to play together. She is a very bossy big sister. He refuses to be told what to do, so there is a constant battle. He doesn't like her to tell him where to go or how to move. It gets him confused and he gets stubborn."

Reasons Given for Purchasing the Game Set

The influence of advertising and the children's peer group attitudes were major factors in parents' deciding to purchase a video game set. Fathers generally favored the purchase, and initially were interested in the games for themselves justifying the purchase as a family activity. In three families, the fact that one child had a perceptual-motor problem or was diagnosed as mildly dyslexic affected the decision. Mothers saw the games as providing potential remedial aid for academic skills. Two mothers, recently divorced, bought the games as special gifts for their boys. They wanted to ensure that the first Christmas without the father in the home was not a time of unhappiness. The games

were a way of filling an emotional void in the family. In nearly all cases, the fact that many of the children's friends already had game sets became a major determinant in the decision.

Sex Differences in Amount of Time Played

Analysis of daily records for differences in amount of time played by boys as compared to girls reveals boys playing somewhat more than girls overall. Younger girls, ages seven to ten, played less than boys of the same age. In one family of two teen-age sons and two teen-age daughters, the boys played twice as much as the girls. In other families, the girls played about 4% less than boys. Because of differences in family composition it is not possible to present a clear statistical picture of these differences. In general, girls tended to lose interest in the games faster than boys. This was particularly true in three families where the console was kept in the boys' bedrooms. A more carefully controlled study of sex differences within a limited age group would test this finding more precisely.

Amount of Television Viewing Relative to Video Game Playing

The study did not collect data on television watching before, during, or at the end of the observation period. However, none of the families reported watching more television, and 14 of the families (70%) reported that they watched less tv after purchasing the video games. These families indicated that instead of watching television as a pastime, they used the television for playing the games.

Mothers reported:

"Thank Heaven! They watch tv less."

"In the beginning it cut down on tv watching hours, but later we went back to tv watching."

"Any time a new cartridge is introduced into the family it cuts down on tv watching."

Some children remarked:

"It used to be all that I did after school; now I don't watch television that much any more. I don't miss it at all."

"I watch less tv now. I used to watch itall the time, and now practically all I use tv for is the games. Mom complains that we have too many cartridges, but now that we don't watch so much tv, she feels better."

In general, it appears that the use of video games does reduce the amount of time spent watching television. The family does not merely add the playing of video games on to time spent watching television, but replaces part of the customary television time with video game playing.

Video Arcade and Coin-Operated Game Playing Compared to Home Video Game Play

Ten families (50%) reported spending less money in coin-operated video games since they obtained the home set. Four families (20%) reported an increase in interest in playing in the arcades or where coin-operated video games could be found. Six families (30%) indicated no change in frequency of play on coin-operated machines. In these families very little interest or money were invested in the coin-operated games.

Among those families who believed the amount of time and money spent in the arcades had been reduced, the following are typical comments:

"The boys used to spend a lot of time and money in the arcades. They are not doing that now. They save their money to buy cartridges."

"I like playing at home better. You don't have to stand in line. At home you can learn the game without losing your money."

"I don't waste my money on the ones I can play at home. If someone gives me money to play,I will; but I want to save my own money for other things."

"It's better to play at home, because when I play Asteroids at Chucky Cheese I'm used to having a joy-stick in my hands, and there I have to push all those

buttons."

"I don't play in the arcades because I"ve got the games at nome. I don't like the atmosphere of the arcades. It's just a lot of people going crazy. Kids who go there are wasting time. They're not bad kids; they just don't have anything better to do with their time."

In families where the arcade playing was viewed as an increasing problem, these statements were made:

"She loves them. She would spend all her money there. She likes people around, and they are more complicated, more interesting."

"Yes, they still play at the arcades,unfortunately. The boys do. It's against our family values. The environment is undesirable."

"They are more interested in playing the coin machines since we got the game. They want to try their skills outside the home."

"The one special arcade is his whole mission in life on Saturday. It's gotten to the point now where he'll just take the bus with some friends. He'll organize them on Saturday morning after his chores are done. They'll go down there and spend about $5.00. He won't take his sister. He says it's not a good place for her; only boys go there."

Mothers of boys complained:

"I thought they'd be less interested in playing the commercial games, but it hasn't turned out that way. The commercial ones keep current, and the home video games are imitations. After they're tired out in the arcades, the companies make the same old game for home video play. It's like seeing an old movie, warmed over. It's a real disappointment. It seems to me games need to be created for the home, rather than just producing less interesting imitations of commercial games."

"Both boys would rather play at the arcade. Those games are different and lots more fun. The original is better than the fake. You push buttons, the screens are bigger. They are more fun because there are lots of people around watching you. There are more sounds; it's more complex; they can put in special features because the sets are bigger."

One adolescent boy expressed a common point of view:

> "There are lots of hoods and tough guys there, and if you step outside there are people smoking marijuana and everything. But the manager gets the cops after them. Good girls don't hang around there. You don't see many girls in there. Maybe they don't want to spend their money."

Children reported spending from 50¢ to $5.00 per week on coin-operated games. One fifteen-year-old boy confided that he had spent as much as $15 in one day playing in the arcades. He was shocked, embarrassed, and ashamed that this could have happened to him. His family was poor and struggling. He reported proudly that he did not spend money on the coin games since he had his home set.

Rules and Restrictions Surrounding Playing Home Video Games

Almost every family stated that homework must be done before any video game playing was permitted; however, several families indicated that the rule was not always observed. Most of the families believed the games had not created serious problems, and the children's game playing did not need to be severely regulated except on rare occasions.

Restricting video game play as a form of punishment was reported in a few cases, along with the same kind of restriction on tv viewing. This happened in situations where chores were not completed or where homework was not properly attended to. In two families arguments or fighting were cited as reasons for restricting the use of the video games. Two other families reported that the games could not be played when the father or others in the family wanted to watch a television program.

In all but one family the playing of video games appeared to be kept in reasonable perspective along with responsibilities and other diverse activities of family life. Only when a new cartridge was purchased did the game playing tend to temporarily dominate. However, in one family the games were played many more hours each week than in the

other families. This family had a pre-teen son, a teenage daughter, and a stepfather; all enthusiastic players.

Affect on School Work and Academic Skills

Twelve families (60%) indicated thatthey could see no change, either improvement or deterioration, of school work which could be attributed to video games. Eight families (40%) indicated improvement in children's school work or skills which could be a result of playing the games. None of these families reported deterioration in academic skills or achievement. Among those who saw no change, typical comments were:

> "It doesn't carry over into school work. There is no transfer."
>
> "I think my reading and school work are just the same."
>
> "The games we have don't help at school."
>
> "It doesn't make that much difference in school. It won't teach you that much. Practice with buttons and joy sticks doesn't make any difference in what you learn."

Among those who believed the video games had helped them in school, the comments were frequently strong and specific:

> "They have the best report cards they've ever had this last period. I don't know what to attribute it to, but they have not changed schools, and the homework rule hasn't changed."
>
> "He seems to have an improvement in his coordination. He judges distances better now. I think it really has helped him in his reading, he is doing much better in reading now. With dyslexia, he did not enjoy reading very much."
>
> "It is helping her with coordination. She tends to be awkward and sloppy, but she's beginning to keep things straight when she writes---lining things up."

"He has perceptual problems. Writing is difficult, and he has a hard time concentrating and completing a task. He is auditorially distractable, with some motor coordination difficulty. The Atari has really helped him."

"I'm faster in reading. I used to go slower, but now I just read faster than my usual speed. It just seems like I want to read faster, my eyes want to go faster. My reflexes are beter."

Improvement in Skills--Reflexes and Coordination

Most of the children verbally reported improvement in coordination or in skills required for game mastery. Parents spoke admiringly of their children's ability to improve their scores, develop the coordination required, and develop clever strategies for game-playing. They also spoke of the importance of these skills in the child's sense of self-esteem:

"The Atari has been great for him. I've seen him go from not being able to do it, to being able to really do it well."

"I have seen a definite change in coordination and reaction time. She is pleased with her skills."

"Maybe it has helped with eye-hand coordination. He has better aiming skills. He is more confident now, doesn't stand back and let others take over the game."

"I think, on the bottom line, it has increased eye-hand coordination. It has probably made them more knowledgeable about technology. I'm amazed at how quickly they understand and retain it; how quickly they pick up patterns and see relationships. It seems to me it's developing memory span. They know exactly the sequence and the cues. It has to be hitting at concentration. It stimulates them to use their brains, as compared to passively watching tv. It would be nice if those skills can be carried over into learning in school."

One boy said: "It improved our reflexes. I play the flute and believe me I need quick reflexes for the 16th notes. I used to be the worst one in the school orchestra, and now I'm first flutist. I think the Atari games made the difference. It improves my thinking. Makes me faster. I can move from one line to the next in music and be ready for my turn to come in...can look ahead without losing track."

"I know I have fast eyes now," said one ten-year-old girl. "When it gets to the top my eyes are going like this. I have to look all over the screen. It helps me not to take forever on my tests. I don't take a lot of time to look at the papers, but can do 100 multiplication problems in about 2½ minutes."

A mother said, "my oldest boy has had some problem in visual sequencing and the younger one has some dyslexia. The eye-hand motor coordination is still difficult. The eye-tracking must be improving in playing these games, because the boys can compete with a cousin and hold their own. They didn't do that well in the beginning."

On strategies, many of the children and their parents learned patterns, reported memorizing some of the mazes and sequences, and described strategies they had developed and shared with each other in order to increase scores. The application of intuitive geometry was mentioned as one developing cognitive skill.

Sex Differences in Skills and Attitudes

Boys viewed themselves as being better than girls at playing the games by virtue of their interest and practice, not because of inherent sex differences. The girls believed the games were designed for boys, but girls would like them and could be competent with them if they practiced.

Parents tended to see the games as a way of breaking down traditional sex and age stereotypes:

> "Age and sex are kind of wiped out," onefather said. "It's just a matter of practice. Girls can beat boys. Girls are competing at a level with theboys, and the boys don't seem to resent it. Brothers in this family teach sisters, but not each other."
>
> "My oldest daughter's goal is to get a high score...to see how high she can get. I hear her raving when she has beaten her own score."

The children commented:

> "I can beat Stephanie, but she couldbe better if she tried harder."
>
> "It's not for boys any more than for girls, but more boys play it. It's for people."
>
> "I think if girls play a lot they will be as good as boys. Two of my girl friends play a lot, and they're very good."

A single mother with a son and two daughters said: "I think that if it were just the two girls, they wouldn't get as loud. The girls and I have learned this method of competition, of intimidation that comes with loud cheering and shouting. Now we'll do that with each other."

In a family with three teen-age daughters and no sons, but boyfriends coming to the house, a girl commented: "It just seems that girls should not be better than boys. Jennifer can beat boys, sometimes she does, it just depends on whether she is in the mood. I see it as something I can compete in with boys, but I get embarrassed when I miss. I don't want them to see me make a mistake."

A twelve-year-old girl, just entering junior high found her knowledge of video games to be a social asset with boys.

"I'm more competitive with girls, but I don't really mind about the boys. It's fun to talk about things because most boys like video-games. When you go to school you have something to talk about. Today, I was talking about Star Gate with a boy I didn't know at lunch in the cafeteria. He was drawing a pattern and we started talking. I don't think the games are mostly for boys, but the boys play it most. I do see some older girls, 9th graders playing, but not too many. I think they are designed for boys, but the girls are getting into it more. At first, I don't think they were really meant for girls."

Fantasy While Playing

When asked if they imagined they were in the scene depicted by the game the younger children more often thought this was the case, but not all of the time. It depended upon the graphics of the game. Frequently, in the sports games, the boys imagined they were really on a team trying to win. Adventure and Donky Kong also seemed to stimulate a sense of imaginary participation in the situation. The older children reported playing to win, to increase their scores, but not as a fantasy-type experience.

Attitudes about War, Violence and Video-Games

None of the families interviewed saw a relationship between playing video-games and developing a war-like or violent personality. Admittedly, these families owned video-games and have a vested interest in denying this possibility. However, the comments across families were consistent in this view:

"No. It depends on how you take it,on how you play it. I have three boys and they don't like to lose, but it is not making them.war-like."

"I don't see it. They see enough of the six o'clock news far worse than they can imagine if they are sitting down playing a game and imagining that they are shooting. Nothing is hidden in the news, and kids see a lot of that."

"No they're not war-like. They are too abstract. It's not like shooting people. It's just another game...no big thing."

"I haven't seen that connection. We don't play that kind of game."

A father who is a young immigrant to this country said, "My judgement is based on my own development as a kid. When I was a kid we played war games and things like that. But, I'm a very peaceful man, and I hate war. I am a passivist. I am anti-nuclear, I am opposed to what is happening in Lebonon, Guatemala and elsewhere. But somehow my playing war games as a kid didn't affect my thinking now. I think games are games. What I don't want the kids to be exposed to is what is shown on tv. That's what is frightening."

Another, "I don't think that you can consider them violent in any way. It's a game for them, not training them to be killers."

A teenage girl remarked: "I don't think of them as war games. Just fun. I don't think of killing anyone. Sometimes I try to. I try to think, 'Oh, if I do this, I'm really going to die.' But usually I don't really have to think about it. There's no real connection between playing the games and growing up to be a warmonger."

"I think of it as a game. Just getting the targets and building my score."

Interest in Computers as a Result of Video-Games

Most of the families considered their video-game sets as a step toward a computer in the family. Only a few families indicated plans to purchase a computer in the near future, but they believed the games were stimulating their children toward an interest in computers and greater confidence in using them. One of the families did purchase a computer eight months after purchasing the video games.

Special Problems Reported and Complaints

Complaints centered around the constant noise from the games, not the overuse of them. A few mothers and fathers said they had the children turn the sound down or turn the machine off after listening to the "bing-bing-bing" of the games for a while.

One mother said she couldn't let her children play the games just before bedtime because of overstimulation. However, another said that if her daughter couldn't sleep she would play video games until she was relaxed and sleepy.

Two parents complained that their sets broke soon after purchase.

Two families complained that the games were not designed for group play, and players had to wait for turns instead of being able to play simultaneously.

Families complained frequently about the exorbitant expense of the new cartridges, the advertising hype of new cartridges, the exploitation of consumers by both advertising and cost. A common complaint was the lack of freshness of the games when they finally became available for the home video-sets, in contrast to the new games coming out first for arcades.

SUMMARY OF FINDINGS AND IMPLICATIONS

This research examined, through observation, interview, and records of daily video-game playing, the impact of home video-games on family life. The focus was on quality of life as a result of the introduction of the games into the home. The study was not designed as an empirical, experimental study comparing quantitative data on cognitive change, skill development or precise sex differences in play. These are important areas for future investigation.

Much of the data is based on interview, self-reporting, and attitudes expressed by individual family members. Opinions of individuals were used as evidence of attitude. No attempt was made to verify the accuracy of the point of view expressed except by comparing the statements of one family member with that of another.

Records of the family video-game play were kept one week out of each month over a four-month period, with a follow-up interview with each family at the end of six months. These records provided data, often uneven, for assessing the amount of time spent playing video games in the family; who played with whom; at what time of day; and which games were most frequently played. Since families did not all have the same cartridges over that time period, comparison of interest in individual games was not useful. The Pac-Man craze was in full swing during this study, therefore many families spent a disproportionate amount of time playing that particular game. It was obvious from interviews and records that a new game in the family was played with great frequency for a short period of time. Two weeks seemed to be the standard time of pre-occupation with a new game. Family play time increased during this period, and fell back to normal perspective following the decline of interest in the new game.

The amount of time spent playing video-games in the families declined for a majority (64%) of families over the four-month period. There were a few families which showed an increase in game playing. In both groups, the increase and the decrease of game playing time differed significantly from the mean playing time recorded for each group over the four-month period. The number of persons in the family did not appear to affect the amount of time the video-games were used in the family. Average, and modal playing time in the twenty families was less than one hour per day, with variations daily and weekly. Families with siblings averaged a slightly higher daily average (54 minutes) than families with an only child (48 minutes).

Boys tended to play the games more by themselves, while girls tended to play when other family members or friends played with them. One may speculate on boys' greater interest, sense of competency, or satisfaction derived from building scores. Some girls did play alone, but the pattern of playing with others is predominant for girls in the study. Socialization experiences, as well as differences in skill and interest, may provide an explanation.

Mothers played video-games less than other family members, with a few mothers reporting never having played the games. Working mothers, as most but not all of these were, are busy people with little time for entertainment or even family recreation at home. A more persuasive explanation for the minimal participation of mothers in the games may be traditional sex stereotypic attitudes toward technology, fast-paced competition, and male-oriented game themes. Some women preferred Pac-Man, Super Breakout, and tennis which are not clearly combat

games. Other research has shown girls and women to perform less well on tests of spatial perception and motor performance. These abilities contribute to success in video game playing. Without strong skills in these areas, women may feel more frustrated than fascinated by the challenges of the games.

In all families a change in family interaction was reported in a positive direction. The games brought families together in new interactive patterns, at least for a period of time. This was valued by adults and children alike.

Even in families where no effect on schoolwork was noted, the development of specific skills of eye-hand coordination, speedier reflexes, and increase in friendly competition were reported.

The most compelling outcome of the study is the extent to which families reported their enjoyment of playing video-games together, and the cooperative spirit surrounding the games which had freshly emerged within the family. The games could be played by children of both sexes, in interaction with adults with each family member experiencing success at some level and with outcomes independent of sex and age. Instead of isolation of children with these games, families came together to play. Instead of becoming addicted to hours of sedentary play the games fell into perspective with other aspects of family life.

The interest in home video-games, in itself, may be a passing fancy in homelife. The interest in the games, exhibited during 1982, may never again be so intense. However, interest in games and technology will continue, if only through the medium of personal computers. The effects of the games on individual children, sex and age differences, the development of cognitive, perceptual and motor skills, and the effects on

social attitudes all need to be explored. The video-computer-game industry needs to be informed and influenced by research results which indicate positive and negative effects of their products on society. The consumer needs a voice in shaping these materials.

Historically, games, toys, and entertainment have reflected the values of the culture in which they are found. They have also reflected the changing technology of a society. Video-games are not different in that respect. Technology has invaded the family in a permanent way. Thisstudy suggests that it is not inherently bad; that families may be trusted to use judgement about time and activities appropriate to their children's lives and in a context of family values. The parents in this study were not powerless in their control over the use of the games. American families at present can react to the quality of video game products on the market only by exercising purchasing veto power. However, it is possible that additional studies of children and families using video-games both in and outside the home, may provide some control and guidance for product development as well as accurate information for adults in evaluating the potential health and hazards of video-game playing.

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